

GKC Input Data and Likelihood			
Data	EAG	WAG	Remarks
Annual Retained Catch (no)	1985/86-2012/13	1985/86-2012/13	Likelihood function for annual total retained catch (1985/86-2012/13)
Retained Catch Length Frequency (dockside sampling)	1985/86-2012/13	1985/86-2012/13	1.From the dockside sample weighted (by sampled boat landing) retained catch relative length frequency distribution is estimated for each year. 2. It is used to distribute the total retained catch into different size bins: 103, 108,.....183 mm CL
			Robust likelihood function for retained length composition (Fournier et al., 1990,) (1985/86-2012/13)
Discard Catch (method 1)	1995/96-2012/13	1995/96-2012/13	1.From the observer length sample weighted (by sampled boat landing) total relative length frequency distribution is calculated for each year. 2. Sublegal nominal CPUE and legal not retained nominal CPUE are distributed among the length bins using the relative length frequencies in each subset. 3. CPUE in each length bin is multiplied by the annual total effort (number of potlifts) and a handling mortality (0.2) to obtain the discard catch by size. 4. Then the discard catches by size are summed up for the size range 100-185 mm CL (model size range) to get the annual discard death. Likelihood function for annual total discard catch.
			Robust likelihood function for discard length composition (1995/96-2012/13)
Discard Catch (method 2)	1990/91-2012/13	1990/91-2012/13	1.From the observer length sample weighted (by sampled boat landing) total relative length frequency distribution is calculated for each year. 2. Nominal total CPUE is multiplied by the annual total effort (number of potlifts), the annual retained catch is deducted from it, and then multiplied the difference by the handling mortality to get the total discard death. 3.This discard death is distributed into length bins by the total relative length frequency (ranges from 10 to 210 mm CL). 4. Finally, the discard catches by size are summed up for the size range 100-185 mm CL (model size range) to get the annual discard death. Likelihood function for annual total discard catch.
			Retained length composition and discard (under method 2) length composition are combined to get the total length composition. Robust likelihood function for total length composition (1990/91-

			2012/13)
Standardized CPUE index	1995/96-2012/13	1995/96-2012/13	GLM is fitted to determine CPUE index separately for 1995/96-2004/05 and 2005/06-2012/13 data sets. The index is related to abundance as: $CPUEIndex = q_t N_t^\beta$ Two scenarios are considered: 1. $\beta = 1$ for both periods. 2. β is estimated in the model (to address the hyper stability situation during the post crab rationalization period) Likelihood function for annual legal CPUE index (two separate LH components (1995/96-2004/05 and 2005/06-2012/13) are added up
Pot Survey CPUE	1997,2000,2003,2006		CPUE Likelihood not considered
Pot Survey CPUE Length Frequency	1997,2000,2003,2006		Size composition likelihood not considered
Groundfish discard Catch	1995/96-2012/13	1995/96-2012/13	Groundfish Observer length frequency data are used to obtain the 100-185 mm CL size range bycatch of males. Likelihood function for annual total groundfish discard catch.
Tag release-recapture size	1997,2000,2003,2006		1.Tag release and recapture length grouped by year at large are used for a fixed growth matrix determination in the model. 2. Same tagging data are incorporated in the WAG data set for growth matrix estimation. Likelihood function consists of six separate growth matrix related likelihood of recaptures for six years of observed recoveries. The proportion of recapture in length-class i of males that were released in a year t and length-class j when they were released and captured after year y is calculated using the growth matrix and summed up for each length and year to get the multinomial proportion for the likelihood calculation.
Likelihoods not related to observed data			Recruit_deviation likelihood 1986-2013 Directed fishery F_deviation likelihood 1985-2012 Groudfish bycatch F_deviation likelihood 1995-2012 High grading QQ_deviation likelihood 1985-2012
Other input information			Weight-at-length: $W = a l^b$ where $a = 2.988 \times 10^{-4}$, $b = 3.135$. M assumed to be 0.18 per year Annual effective sample sizes (retained, directed fishery discard, groundfish discard) scaled to 200 Knife-edge male maturity length 121 mm CL

